

## 6.40-7.20 GHz 4-Watt Internally-Matched Power FET

### FEATURES

- 6.40 – 7.20 GHz Bandwidth
- Input/Output Impedance Matched to 50 Ohms
- +36.5 dBm Output Power at 1dB Compression
- 9.5 dB Power Gain at 1dB Compression
- 36% Power Added Efficiency
- -46 dBc IM3 at  $P_o = 25.5$  dBm SCL
- Hermetic Metal Flange Package
- 100% Tested for DC, RF, and  $R_{TH}$



### DESCRIPTION

The EIC6472-4 is a high power, highly linear, single stage MFET amplifier in a flange mount package. This amplifier features Excelics' unique MESFET transistor technology.



Caution! ESD sensitive device.

### ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

SYMBOL	PARAMETERS/TEST CONDITIONS <sup>1</sup>	MIN	TYP	MAX	UNITS
$P_{1dB}$	Output Power at 1dB Compression $f = 6.40\text{-}7.20\text{GHz}$ $V_{DS} = 10\text{ V}$ , $I_{DSQ} \approx 1100\text{mA}$	35.5	36.5		dBm
$G_{1dB}$	Gain at 1dB Compression $f = 6.40\text{-}7.20\text{GHz}$ $V_{DS} = 10\text{ V}$ , $I_{DSQ} \approx 1100\text{mA}$	8.5	9.5		dB
$\Delta G$	Gain Flatness $f = 6.40\text{-}7.20\text{GHz}$ $V_{DS} = 10\text{ V}$ , $I_{DSQ} \approx 1100\text{mA}$			$\pm 0.6$	dB
PAE	Power Added Efficiency at 1dB Compression $V_{DS} = 10\text{ V}$ , $I_{DSQ} \approx 1100\text{mA}$ $f = 6.40\text{-}7.20\text{GHz}$		36		%
$I_{d1dB}$	Drain Current at 1dB Compression $f = 6.40\text{-}7.20\text{GHz}$		1100	1300	mA
IM3	Output 3rd Order Intermodulation Distortion $\Delta f = 10\text{ MHz}$ 2-Tone Test; $P_{out} = 25.5\text{ dBm}$ S.C.L. <sup>2</sup> $V_{DS} = 10\text{ V}$ , $I_{DSQ} \approx 65\%$ IDSS $f = 7.20\text{ GHz}$	-43	-46		dBc
$I_{DSS}$	Saturated Drain Current $V_{DS} = 3\text{ V}$ , $V_{GS} = 0\text{ V}$		2000	2500	mA
$V_P$	Pinch-off Voltage $V_{DS} = 3\text{ V}$ , $I_{DS} = 20\text{ mA}$		-2.5	-4.0	V
$R_{TH}$	Thermal Resistance <sup>3</sup>		5.5	6.0	$^\circ\text{C/W}$

Notes:

1. Tested with 100 Ohm gate resistor.
2. S.C.L. = Single Carrier Level.
3. Overall  $R_{th}$  depends on case mounting.



# EIC6472-4

## ABSOLUTE MAXIMUM RATINGS FOR CONTINUOUS OPERATION<sup>1,2</sup>

SYMBOL	CHARACTERISTIC	VALUE
$V_{DS}$	Drain to Source Voltage	10 V
$V_{GS}$	Gate to Source Voltage	-4.5 V
$I_{DS}$	Drain Current	IDSS
$I_{GSF}$	Forward Gate Current	40 mA
$P_{IN}$	Input Power	@ 3dB compression
$P_T$	Total Power Dissipation	21 W
$T_{CH}$	Channel Temperature	150°C
$T_{STG}$	Storage Temperature	-65/+150°C

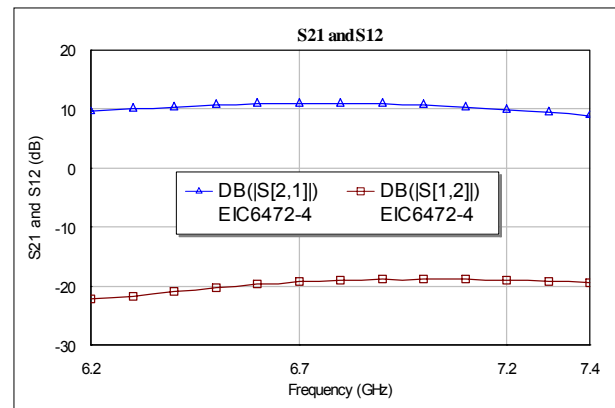
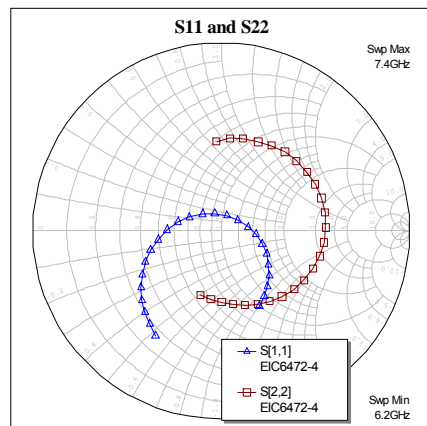
Notes:

- Operating the device beyond any of the above ratings may result in permanent damage or reduction of MTTF.
- Bias conditions must also satisfy the following equation  $P_T < (T_{CH} - T_{PKG})/R_{TH}$ ; where  $T_{PKG}$  = temperature of package, and  $P_T = (V_{DS} * I_{DS}) - (P_{OUT} - P_{IN})$ .

## PERFORMANCE DATA

Typical S-Parameters (T= 25°C, 50Ω system, de-embedded to edge of package)

$V_{DS} = 10$  V,  $I_{DSQ} \approx 1100$ mA



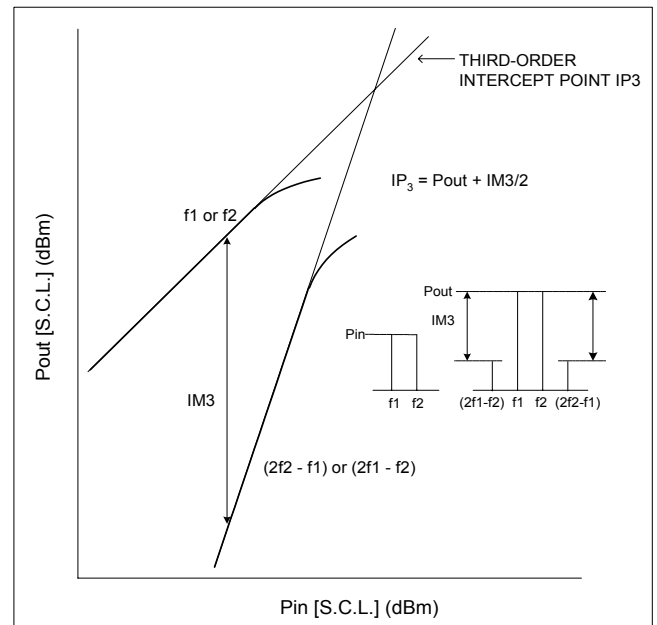
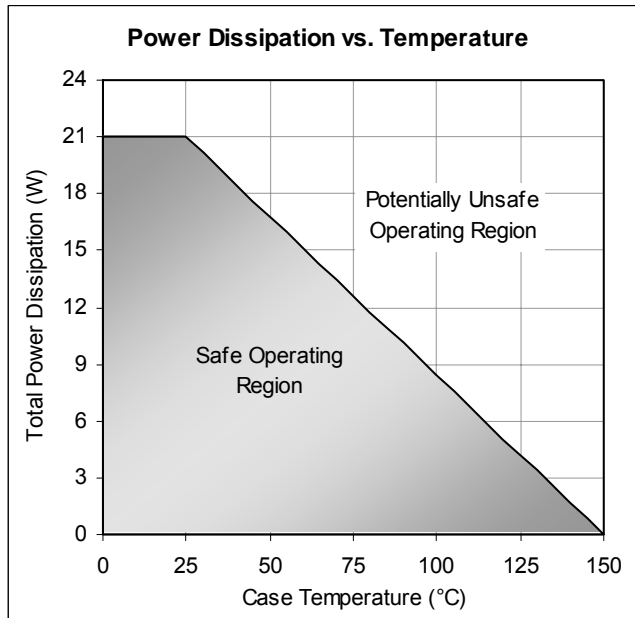
FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
6.0	0.7446	-102.56	2.6955	-4.96	0.0623	-61.34	0.4238	127.4
6.2	0.6564	-122.03	3.0007	-31.42	0.0778	-87.4	0.4753	93.04
6.4	0.5197	-144.79	3.2845	-59.46	0.091	-116.15	0.5273	59.7
6.6	0.3381	-172.19	3.4917	-89.7	0.1042	-146.01	0.5579	26.43
6.8	0.1334	137.99	3.545	-121.42	0.1132	-176.76	0.5493	-6.3
7.0	0.1434	8.46	3.3891	-152.94	0.1165	153.37	0.4955	-38.82
7.2	0.3102	-35.87	3.1032	176.54	0.1127	123.35	0.4145	-72.21
7.4	0.4488	-63.26	2.7841	148.43	0.1073	94.96	0.3577	-108.03
7.6	0.5418	-88.96	2.4831	120.54	0.0965	66.98	0.3552	-148.1
7.8	0.5851	-112.49	2.1721	93.7	0.0875	40.86	0.4007	176.95
8.0	0.6041	-135.73	1.8779	68.06	0.0765	17.11	0.4693	151.21

Specifications are subject to change without notice.

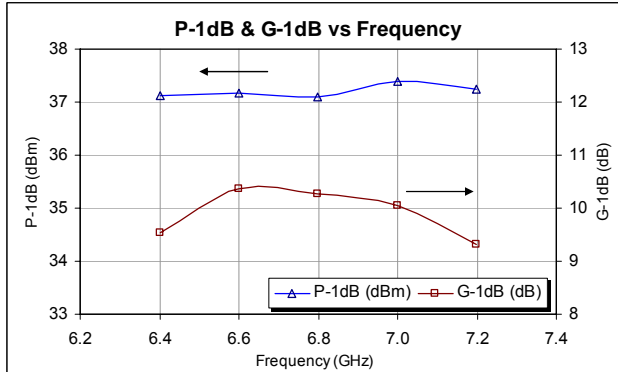
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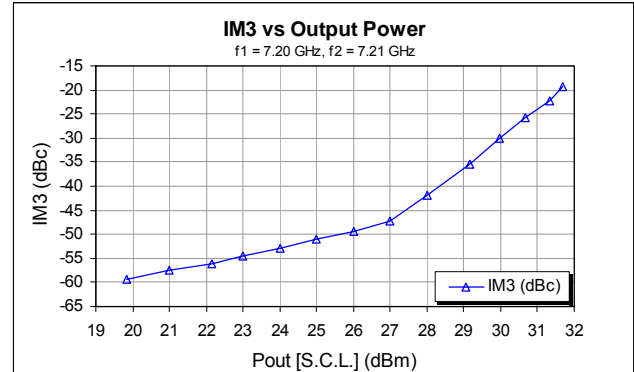
## Power De-rating Curve and IM3 Definition



## Typical Power Data ( $V_{DS} = 10\text{ V}$ , $I_{DSQ} = 1100\text{ mA}$ )

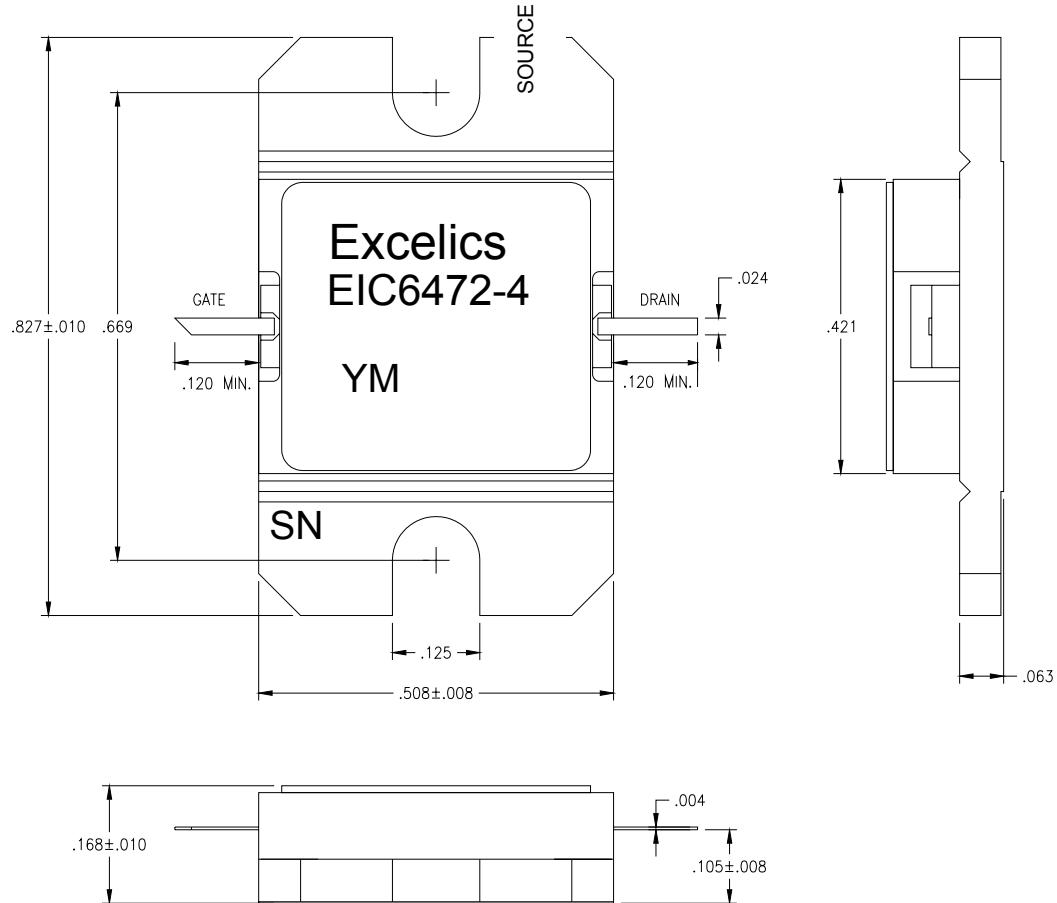


## Typical IM3 Data ( $V_{DS} = 10\text{ V}$ , $I_{DSQ} \approx 65\% IDSS$ )



## PACKAGE OUTLINE

Dimensions in inches, Tolerance  $\pm .005$  unless otherwise specified



## ORDERING INFORMATION

Part Number	Grade <sup>1</sup>	f <sub>Test</sub> (GHz)	P <sub>1dB</sub> (min)	IM <sub>3</sub> (min) <sup>2</sup>
EIC6472-4	Industrial	6.4-7.2 GHz	35.5	-43

Notes: 1. Contact factory for military and hi-rel grades.  
2. Exact test conditions are specified in "Electrical Characteristics" table.